THE academic address to the University College of North Wales was delivered on Friday last by Sir Arthur Rücker, F.R.S., principal of the University of London, who chose as his subject "University Organisation in Great Britain." Sir Arthur Rücker traced the various phases through which the university systems of our country had passed, starting with the residential university, represented at the present time by Oxford and Cambridge (and in former days by Stamford). Next in order of development came the purely examining University of London, which led to the formation of provincial university colleges. The federal university came next in the Victoria University and University of Wales. The University of Birmingham represented a new phase, namely, the municipal university, of which at the present time there were two representatives in Lancashire and two in Yorkshire. The impossibility of raising by private subscriptions sufficient funds for the endowment of universities and university colleges resulted in the necessity of Government subsidies, and a great deal more ought to be expected in this direction in the near future. In the further development of university organisation a number of interesting questions would have to be answered. These related to such points as how far Government assistance was to be given to colleges and how far to universities, whether institutions partaking of the character both of colleges and universities should be subsidised under both headings, whether it was desirable to confer on new universities generally the powers of examining external students as provided for in the charter of the Birmingham University, and the extent to which universities subsidised at the same time by municipalities and the Government should be under the inspection of both bodies.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, June 2.—"Colours in Metal Glasses and in Metallic Films." By J. C. Maxwell **Garnett.**

The first part of the paper is devoted to coloured glasses. The phenomena which it seeks to explain were observed by Siedentopf and Zsigmondy.

It is proved in this paper that every medium made up of metal spheres embedded in a non-absorbing substance in such manner that the average distance between two adjacent spheres is much less than a wave-length of light has a perfectly definite colour, depending only on the optical constants of the metal of which the spheres are made, on the refractive index of the substance in which they are embedded, and on the quantity of metal present, but not on the size or distance apart of the spheres.

It is shown that the particles which Siedentopf and Zsigmondy observed in gold glasses are spherical when their diameters are less than 10^{-5} cm. The presence of the metal spheres accounts for the red colour of gold and copper ruby glass, and for the yellow colour of silver glass, and would give a blue-violet colour to "potassium-sodium" glass (potassium-sodium being an amalgam of which the optical constants have been determined by Drude).

Experiments are described proving that these characteristic colours can be produced in a colourless metal glass containing the metal in solution or in combination (the state in the manufacture of gold or copper ruby glass before the second heating) by the β radiation from radium.

The calculated properties of media containing many metal spheres to a wave-length of light account for the changes of colour, for the initial increase in absorption, and for the final change to almost complete transparency which Mr. G. T. Beilby observed during the annealing of gold and silver films. Explanations are given of the changes of colour on heating observed by Prof. R. W. Wood in potassium and sodium films deposited on the insides of exhausted glass bulbs. The increase in strength of colour which was generally observed in the light transmitted by these films when the plane of polarisation of obliquely incident light was changed from that of incidence to a perpendicular position is also explained.

Evidence is adduced to show that the allotropic silvers obtained by Carey Lea are further examples of this type of medium.

"A Method of Measuring directly High Osmotic Pressures." By the Earl of **Berkeley** and E. G. J. **Hartley.** Communicated by W. C. D. Whetham, F.R.S.

This is a preliminary paper describing the authors' method of determining high osmotic pressures. It is as follows:—

A porous porcelain cylinder, glazed only at the ends, has a copper ferrocyanide membrane deposited on its outer surface. The solution surrounds the cylinder, and the inside, which is connected to a graduated glass capillary, is filled with water. By means of a plunger, which works in a steel cylinder and is actuated by a lever and weights, pressure is put upon the solution. So long as this pressure is less than the osmotic pressure of the solution, water from the inside of the cylinder passes through the membrane into the solution, and consequently the water-level in the capillary falls. When the pressure on the solution is gradually increased, the rate at which the level falls gradually decreases, and this continues until the osmotic pressure of the solution is reached; then the level in the capillary is stationary. A further increase of pressure on the solution will then cause the level to rise. The rate of movement of the level in the capillary is a function of the difference between the osmotic pressure and the pressure on the solution, so that by observing the changes in this rate consequent on the corresponding changes in the pressure, the point at which the latter is equal to the osmotic pressure can be deduced. The results of some experiments with cane sugar, extending up to a solution having an osmotic pressure of 45 atmospheres, are given.

The semipermeable membranes are made partly by following Pfeffer and partly by a modification of Morse's electrolytic method. By this means a membrane that withstood 120 atmospheres pressure was obtained.

"On the Electric Effect of Rotating a Dielectric in a Magnetic Field." By Dr. Harold A. **Wilson.** Communicated by Prof. J. J. Thomson, F.R.S.

It was shown by Faraday in 1831 that an electromotive force is induced in a conductor when it moves in a magnetic field so as to cut the lines of force. The object of the experiments described in this paper was to see if a similar electromotive force is induced in a dielectric when it moves in a magnetic field.

According to Maxwell's electromagnetic theory as developed by H. A. Lorentz and Larmor, such an electromotive force should be induced in a dielectric, and should be equal to that in a conductor multiplied by the factor $1-K^{-1}$, where K is the specific inductive capacity of the dielectric.

The method employed was to rotate a hollow cylinder of ebonite in a magnetic field parallel to the axis of the cylinder. The inside and outside surfaces of the cylinder were provided with metal coatings, with which electrical contact was made by sliding brushes. The inside coating was connected to earth, and the outside coating to one pair of the quadrants of a sensitive quadrant electrometer, the other pair of quadrants being connected to earth. The magnetic field was then reversed, so reversing the induced electromotive force in the ebonite. The resulting electric displacement was measured by means of the electrometer, the quantity of electricity required to produce a given deflection of the electrometer needle being determined by means of a small parallel plate guard ring condenser.

The cylinder used was 10 cm. long and $2r_2=4{\cdot}15$ cm., $2r_1=2{\cdot}01$ cm. It was mounted in a solenoid having 95 turns per cm., by which a magnetic field of strength 1500 could be produced. The cylinder was driven by a $\frac{1}{2}$ horse-power motor, and could be run at 200 revolutions per second.

The mean result obtained for the quantity of electricity set free on the outside coating of the cylinder, on reversing the magnetic field, only differs from the amount calculated theoretically by 1 per cent. The specific inductive capacity of the ebonite, as determined by measuring the capacity of the cylinder, was 3·54, while the value calculated from the results obtained was 3·64.

The results obtained are thus in complete agreement with the theories of Lorentz and Larmor, and may be regarded as a confirmation of these theories.

June 9.—"On the Combining Properties of Serum-Complements and on Complementoids." By Prof. Robert **Muir** and Dr. Carl H. **Browning.** Communicated by Sir J. S. Burdon-Sanderson, Bart., F.R.S.

The following are the chief results obtained from the experiments described in this paper. It is, of course, to be understood that they are held to apply only to the cases investigated, viz. the immune-body for ox's corpuscles obtained from the rabbit, used along with rabbit's and guinea-pig's complements and complementoids. Further observations will be necessary to determine whether they obtain generally.

(1) The existence of complementoids in heated sera can be shown in ordinary test-tube experiments, by their preventing (*a*) the union of complement with anti-complement, (*b*) the union of complement with R+IB molecules after lysis.

(2) The amount of complementoid derived from complement as tested by the combining relationships varies; in the case of the rabbit it is approximately equal to the original amount of complement; in the case of the guinea-pig it is considerably less than that amount.

(3) The combining affinity of complementoid, both for anti-complement and for R+IB molecules after lysis, is not much inferior to that of complement.

(4) On the other hand, complementoid has a feeble affinity for R+IB molecules before lysis, *i.e.* for intact red corpuscles treated with immune-body: of the complementoid added only a small quantity enters into combination; hence complementoid does not prevent lysis by complement.

(5) When red corpuscles united with multiple doses of immune-body are lysed by a single dose of complement, the surplus R+IB molecules can be saturated with excess of complementoid, so that almost no complement can subsequently be taken up. This result is obtained also with rabbit's complementoid and guinea-pig's complement, and with guinea-pig's complementoid and rabbit's complement.

"On the Ossiferous Cave-Deposits of Cyprus." By Dorothy M. A. **Bate.** Communicated by Dr. Henry Woodward, F.R.S.

"Further Note on the Remains of *Elephas cypriotes*, Bate, from a Cave-Deposit in Cyprus." By Dorothy M. A. **Bate.** Communicated by Dr. Henry Woodward, F.R.S.

Entomological Society, June 1.—Prof. E. B. Poulton, F.R.S., president, in the chair.—Mr. E. B. **Green** exhibited various insects from Ceylon, including a "carpenter bee" (*Xylocopa fenestrata*, Fab.) and a large asilid fly (*Hyperechia xylocopiformis*, Wlk.) which very closely mimics it; specimens of a Mycetophilid fly and cocoons from which they emerged, showing their beautiful structure; and examples of a tineid moth with remarkable larval cases.—Mr. H. St. J. **Donisthorpe** exhibited specimens of the rare *Tachys parvulus* from the New Forest.—Mr. J. E. **Collin** exhibited specimens of *Mochlonyx velutinus*, a rare British Culicid which he, in company with Messrs. Verrall and Wainwright, had found in numbers near Beaulieu, in Hampshire, on May 22.—Mr. A. J. **Chitty** exhibited an Ophionine ichneumon with the pollen of an orchid firmly attached to the head, making the insect look as though it was attacked by fungus.—Mr. C. P. **Pickett** exhibited long series of *Angerona prunaria* and *Lycaena corydon* showing the remarkable range of variation in both species.—The **President** exhibited specimens of *Paltothyreus tarsatus*, Fabr., an ant belonging to the family Poneridæ, recently received from Dr. S. Schönland, who mentioned that about eight miles west of Palapye Road Station, Cape Colony, he had noticed an awful stench, which, however, passed off after a time. It turned out afterwards that it emanated from these ants living in trees.—The **President** also exhibited a cluster of the green eggs of *Vanessa urticae* fixed to the under-side of a small leaf towards the summit of a nettle-stem. The cryptic resemblance of the eggs to their environment was very remarkable. He then read a note on the courtship and pairing of the species.—Dr. T. A. **Chapman** exhibited two very interesting Erebias caught by the president on the Guadarrama (near Madrid, Spain) on July 25, 1902, at an elevation of about 6000 feet. Though taken together and very much alike, they proved to be of two species, viz. *E. evias* and *E. stygne*, both males. He remarked that the same two species which he found last year in Spain associated together and closely resembled each other, which is not their habit in Switzerland. He also exhibited the ova, larval work, pupæ, and imagines of Anthomyiina, sp., a dipteron that lays its eggs on a fungus, *Epichloe typhina*, Buk., common in June on grass stems. He had often wondered at the curious way of life of this larva, living under a case and burrowing out on the surface of the fungus, making labyrinthine tracks when it ate the incipient spore-bearing layer.—Mr. H. J. **Turner** exhibited several species of the lepidopterous genus Coleophora, and contributed notes on them.—Colonel Charles **Swinhoe** read a paper on tropical African Geometridæ in the national collection.—Mr. W. L. **Distant** communicated a paper entitled "Additions to a Knowledge of the Family Cicadidæ."—The president communicated a paper by Mr. G. F. **Leigh** entitled "Synepigonic Series of *Papilio cenea* (1902–3) and of *Hypolimnas misippus* (1904), together with Observations on the Life-history of the Former," and exhibited specimens to illustrate the same.—Mr. Edward **Saunders,** F.R.S., communicated a paper on Hymenoptera Aculeata from Majorca (1901) and Spain (1901–2).

Zoological Society, June 7.—Dr. F. DuCane Godman, F.R.S., vice-president, in the chair.—A communication from Lieut.-Colonel J. Malcolm **Fawcett** contained descriptions of ten species of butterflies, mainly from high elevations in the north-eastern Himalayas. Eight of them were new species or varieties.—Dr. A. G. **Butler** contributed a paper on seasonal phases in butterflies.—Captain Richard **Crawshay** read some notes on the prey of the lion, and exhibited some tips of porcupine quills that had been found buried in a lion's fore paws, together with the skull and skin of the lion.—Mr. F. E. **Beddard,** F.R.S., read the following papers, based on observations he had made in the society's prosectorium:—(1) Note on an apparently abnormal position of the "brephos" within the body of a skink; (2) contributions to the knowledge of the visceral anatomy of the pelagic serpents *Hydrus platyurus* and *Platyurus colubrinus*; and (3) on the presence of a parasternum in the lacertilian genus Tiliqua, and on the poststernal ribs in that genus.—A communication from Dr. E. A. **Goeldi** contained a description and an account of the habits of the rare rodent *Dinomys branickii*, Peters, specimens of which had recently been received at the Goeldi Museum, Pará.—A communication from Dr. C. **Satunin** contained a description of the black wild cat of Transcaucasia.—A paper was read from Mr. R. **Lydekker** containing the description of a new race of buffalo from East Central Africa. A second paper by Mr. Lydekker contained the description of a new species of deer from Ichang.—Dr. A. Smith **Woodward,** F.R.S., read a paper on two new labyrinthodont skulls which had recently been acquired by the British Museum. One was from the Triassic sandstone of Staffordshire, and the other from a formation of apparently the same geological age in Spitsbergen.

Geological Society, June 8.—Dr. J. E. Marr, F.R.S., president, in the chair.—The palæontological sequence in the Carboniferous Limestone of the Bristol area: A. **Vaughan.** The zonary divisions established are given in a table in the form in which they are finally set out. The corals and brachiopods are chosen as zone and subzone fossils, and genera are selected for zone-indices and circuli (or species-groups) for subzonal indices. To secure definiteness photographic figures are introduced. The relative acceleration of the two groups employed is not identical in different localities, and there is a small relative displacement of one group upon the other. The stratigraphy of all the important sections and isolated exposures in the Bristol area is dealt with. In each case is given a description of the position at which each zone or subzone is exposed and of its lithology, a list of the corals and brachiopods found, and a comparison with the same horizon in other parts of the Bristol area. The author claims that in the area with which he deals, his table of ranges is sufficient to enable any worker to zone any exposure with a considerable degree of accuracy.—On a small Plesiosaurus-skeleton from the White Lias of Westbury-on-Severn: W. F. **Gwinnell.** The matrix of the specimen corresponds with the White Lias. The remains include more than twenty dorsal vertebræ, with spinous and transverse processes, lying in natural sequence. A pseudomorph of the spinal cord in calcite occurs also in position. Hitherto only single vertebræ or fragmentary bones of Plesiosaurus have been recorded from this horizon in Britain. At present, it has not been found possible to assign the fossil to any existing species.—The evidence for a non-sequence between the Keuper and Rhætic series in N.W. Gloucestershire and Worcestershire: L. **Richardson.** The section at Wainlode Cliff shows a transition in the "bone-bed," from a thin pyritic stratum, crowded with fish-remains, to a micaceous sandstone-bed, usually devoid of such remains and about a foot thick. This sandstone may be called the "bone-bed-equivalent." As the bone-bed can be traced in a single section laterally into a sandstone-bed devoid of those remains, the contemporaneity of the two developments is considered established. Above the main bone-bed the deposits of the Rhætic are persistent, but not below. Black shales are generally present below the bone-bed in Worcestershire, but in places there comes in a sandstone between it and the "tea-green marls." It is found that the greatest thicknesses of the Rhætic rocks under the bone-bed coincide with synclines, and the least thicknesses with anticlines. Thus the earth-pressures recognised in later times were probably at work at the close of the Keuper period. As the area once covered by the waters of the Keuper sea gradually sank, the Rhætic ocean slowly encroached upon the land-surface, and successive overlaps of the several infra-bone-bed deposits resulted.

Physical Society, June 10.—Dr. R. T. Glazebrook, F.R.S., president, in the chair.—Prof. H. L. **Callendar** gave a demonstration of the projection of the indicator diagrams of a petrol motor. The lantern-slides illustrated the working of the motor under various conditions, and were prepared to elucidate the nature of some of the defects which occur in practice. The motor itself was exhibited in action, with the indicator attached, and the actual diagrams were projected on the screen showing the changes of form as they occur when the conditions of running are changed. The motor employed was a Clement-Garrard cycle-motor, with 60 mm. bore and 70 mm. stroke. The engine, like most other internal combustion engines, works on the four-stroke cycle of operations—suction, compression, explosion, and exhaust—and runs at speeds varying from 2000 to 2500 revolutions per minute.—A model illustrating the propagation of an alternating current along a telephone cable, and a simple theory of the same: Prof. J. A. **Fleming.** Although the mathematical theory of the propagation of alternating currents along lineal conductors having capacity, inductance, resistance, and leakage has been developed by many writers in great fulness, the conclusions reached by them have not always been readily assimilated by practical engineers, and in some cases unsound theories have been put forward regarding the conditions limiting telephonic speech along wires. The present paper contains an account of a model (exhibited at the meeting) which has been constructed by the author for the purpose of explaining in a simple manner the physical meaning of the mathematical expressions which are reached in discussing the propagation of alternating currents along a telephone or telegraph cable.—Mr. M. E. J. **Gheury** exhibited a gyroscopic collimator. The instrument is used in connection with an ordinary sextant, the observation being taken as with the sea horizon by bringing the image of an observed body into a field of vision, in which a horizontal grating of a special kind allows the observer to ascertain the direction of the true horizon.

Linnean Society, June 16.—Prof. W. A. Herdman, F.R.S., president, in the chair.—Mr. R. Brooks **Popham** sent for exhibition some calculi from the horse: two of very large size were obtained *post mortem* from a cart-horse employed in hauling coal; a third specimen from the same animal, on being broken, showed the nucleus to be a piece of coal, probably swallowed with its food. Another large stone was associated with many smaller, from a second horse—nearly one hundred in all. The specimens had been obtained from the stomach or intestinal canal of the animals.—Canon F. C. **Smith** sent for exhibition a handsome inflorescence of a scrambling shrub from Freetown, Sierra Leone, in habit resembling our native *Clematis Vitalba*. It proved to be *Rhynchosia calycina*, Guill. and Perr., which is widely spread in tropical Africa, reaching Rhodesia.—On variations in the arrangement of hair on the neck of the domestic horse: Dr. Walter **Kidd.** The author sought to test the validity of the theory that certain phenomena in the arrangement of hair in mammals are produced by mechanical causes. Numerous observations of the changes from a primitive type were figured and described. These changes, being shown to be congenital and of mechanical origin, were held to be instances of the inheritance of acquired characters.—An account of the Jamaica species of Lepanthes: Dr. **Rendle** and W. **Fawcett.**—On blaze currents of vegetable tissues: Dr. A. D. **Waller,** F.R.S. The author showed that these currents were symptomatic of the living tissue, and were not shown by dead organisms. In experimenting upon peas (*Pisum sativum*) the author mentioned the need of access to a garden, in order that the material might be gathered in proper condition, for certain experiences showed that garden produce obtained in the ordinary course from a market had suffered so much from bruising as to be worthless in these experiments.—On British freshwater Rhizopoda: J. **Cash.**—On the place of Linnæus in the history of botany: P. Olsson **Seffer.**

Royal Statistical Society, June 21.—Major P. G. Craigie, C.B., president, in the chair.—In a paper entitled "Observations on the Production and Consumption of Meat and Dairy Products," Mr. **Rew** summarised the conclusions of the committee of the society on both branches of their inquiry. The results suggested that the average consumption per head in this country was, of meat 121·8 lb., of milk 15 gallons, of cheese 10½ lb., and of butter 18½ lb. The meat included 56·8 lb. of beef and veal, 27½ lb. of mutton and lamb, and 36·8 lb. of bacon and pork, but these quantities did not supply all the carnivorous demands of the population, as poultry, game and rabbits, as well as what butchers termed the "fifth quarter," were not included. In the case of milk, allowance should be made for the consumption of separated or skim milk, and also for condensed milk, neither of which was included in the average of 15 gallons. Reference was made to previous estimates, and it was suggested that the home production, both of meat and milk, had increased in recent years, though by no means sufficiently to keep pace with the growth of population. Some figures representing the estimated consumption in certain European countries, in the United States, and in Australasia, were given, and as the result of the comparison Mr. Rew observed that we appear to be well ahead of other European nations in meat consumption, but appreciably behind our American cousins, and remarkably less carnivorous than our Australasian brethren.

Dublin.

Royal Irish Academy, June 13.—Prof. R. Atkinson, president, in the chair.—Mr. George **Coffey** and Mr. R. Lloyd **Praeger** read a paper on the Antrim raised beach, in which they discussed the question of post-Glacial oscillations in northern Ireland, their extent and age. Their conclusions point to a submergence, of which the later part, amounting to at least 20 feet, is early Neolithic in age, followed by an emergence of some 30 feet, which is later Neolithic, the only post-Neolithic movement being a slight submergence. The area affected by these movements embraces northern England, southern Scotland, and northern Ireland. Beyond this area, the Neolithic emergence appears to be absent.

Paris.

Academy of Sciences, June 20.—M. Mascart in the chair.—Emanations and radiations: M. **Berthelot.**—On stability of equilibrium: Paul **Painlevé.**—On a new carbide of molybdenum, MoC: H. **Moissan** and K. **Hoffmann.** Molybdenum resembles tungsten and chromium in forming more than one carbide. The compound MoC described in the present communication is formed by heating molybdenum, aluminium, and lamp black together in the electric furnace. It is crystalline, harder than quartz, is attacked by acids with difficulty, except nitric acid, and is not decomposable by water.—The influence of discontinuity of muscular work on the energy expenditure: A. **Chauveau.**

—On the general theory of fundamental functions: W. **Stekloff.**—On the theory of spherical functions: Niels **Nielson.**—On the exceptional case of M. Picard and multiform functions: G. **Remoundos.**—On the construction of aërostats: Ch. **Renard.**—On the refractive powers of dissolved substances: approximate laws: C. **Chéneveau.** Generalisations of the experiments made by the author and by Dijken. It is shown that there is a constant ratio between the molecular refractive power of substances in solution and the square root of the molecular weight.—On the spectrum of calcium fluoride in the electric arc: Ch. **Fabry.** Most salts introduced into the electric arc give only the spectrum of the corresponding metal, but this is not the case with the fluorides of calcium, barium, and strontium. In this case, besides the spectrum of the metal, there is a brilliant band spectrum, which probably arises from the undecomposed fluoride. All the bands can be represented by equations of the form $N=B-Am^2$, in which N is the frequency, A and B constants, and m an integer.—The direct study of the transport of ultramicroscopic particles by the current: A. **Cotton** and H. **Mouton.** The motion of minute particles of colloidal silver has been studied under the microscope. Under the influence of an alternating current the particles are set in vibration, the period of which corresponds to the frequency of the alternating current.—The action of a magnetic field upon the n- and n_1-rays: Jean **Becquerel.** The action of the n- and n_1-rays upon feebly phosphorescent calcium sulphide is not produced when the bundle of rays passes through a magnetic field normal to the lines of force, but the action is transmitted without alteration parallel to the field.—An attempt at a photographic method for studying the action of the n-rays upon phosphorescence: E. **Rothé.** Owing to the difficulties experienced by many experimenters in obtaining definite results with a phosphorescent screen, it is obviously preferable to use an objective method if possible. An account is given of a photographic method.—Influence of the colour of luminous sources on their sensibility to the n-rays: C. **Gutton.** The sensibility of phosphorescent substances varies greatly with their colour. Calcium sulphide with violet phosphorescence is the most sensitive; the sulphides of the alkaline earths and sulphide of zinc, which possess a green phosphorescence, are less sensitive, and with sulphides possessing an orange phosphorescence no effect has been observed with the n-rays.—Remarks on a note of P. Villard on the magnetokathodic rays: H. **Pellat.**—On the electrostatic deviation of the magnetokathodic rays: Ch. **Fortin.**—The continuous registration of gaseous ionisation and of radio-activity by methods of loss of charge: Charles **Nordmann.** An electroscope is connected to the poles of a high voltage battery through a high resistance. Under the influence of the ionised gas the electroscope tends to lose a certain quantity per second, and this is balanced against the quantity coming in through the resistance from the battery. It is shown that the apparatus can be arranged to give the number of ions in the gas studied by a single reading.—On the properties of recently prepared gases: Eugène **Bloch.**—New researches on the cementation of ordinary and special steels: Léon **Guillet.**—On the production of isomorphous mixtures of lime and lithia: P. **Lebeau.** A mixture of the carbonates of lime and lithium decomposed by heat in a vacuum leaves a well crystallised residue of the mixed oxides, the composition of which depends on the temperature and duration of heating. The formation of mixed crystals of lime and lithia renders probable a cubic form for the latter substance.—The electrolytic separation of nickel and zinc: MM. **Hollard** and **Bertiaux.** In the presence of ammonium nitrate the nickel only is deposited. Experimental data are given showing that the separation is complete.—The alloys of magnesium with aluminium and antimony: Hector **Pécheux.**—The formation of dimethylisopropylcarbinol in the reduction of acetone: G. **Denigès.** In addition to isopropyl alcohol and pinacone, the usual reduction products obtained from acetone by reduction with sodium, the author has been able to isolate the above tertiary alcohol. The yield is small.—Syntheses in the pentamethylene series; the diamylene of pentane-diol: 1:5-diiodo- and dibromopentane: J. **Hamonet.**—The condensation of phenols and aromatic amines with benzylidene-aniline: Charles **Mayer.**—On the normal presence of formaldehyde in products of combustion and in smoke: A. **Trillat.** A small amount of formaldehyde is always formed in all combustions, even of hydrocarbons. The author regards this as a confirmation of the results of A. Levy and Henriet on the presence of traces of formaldehyde in atmospheric air.—Addition compounds of rosaniline salts; their dissociation, thermochemistry, and constitution: Jules **Schmidlin.**—Researches on the azo colouring matters derived from 2:2-dinaphthol: Emm. **Pozzi-Escot.**—On the existence of an oxidising-reducing diastase in plants, and the conditions of its action: J. E. **Abelous.**—On the classification of the Anthozoa: Louis **Roule.**—Parallel adaptation of the host and parasite under the same conditions of existence in certain Lepidoptera and their parasitic Diptera: J. Kunckel **d'Herculais.**—On the early state in some palms: C. L. **Gatin.**—On the geology of the neighbourhood of Barcelona, Spain: Jaime **Almera** and Jules **Bergeron.**—The Coal-measures in the north of Africa: Ed. **Bureau.**—The molecular weight of glycogen: Madame Z. **Gatin-Gruzewska.** The lowering of the melting point observed by Sabanejew for glycogen was due to the presence of impurities, since determinations on the purified substance give a scarcely appreciable lowering. The molecular weight of glycogen from these determinations cannot be lower than 140,000.—Studies on the action of maltase. Constancy of the ferment: influence of the products of the reaction: Mdlle. Ch. **Philoche.**—Contribution to the study of the formation and elimination of urea in man: H. **Labbé** and M. **Morchoisne.**—On the action of blood rendered hepatotoxic by intraperitoneal injections of the nucleoproteids of the liver: H. **Bierry** and André **Mayer.**—On the progressive ripening of cheese: M. **Lindet** and Louis **Ammann.**—Oceanography of the region of the Azores: M. **Thoulet.**

CONTENTS.

PAGE
Mathematical Books 193
Recent Entomological Works. By W. F. K. . . . 194
Darwinism and the State. By F. W. H. 195
Chemistry of the Sugars. By E. F. A. 196
Our Book Shelf :—
  Waggett: "Religion and Science: Some Suggestions for the Study of the Relations Between Them."—**F. A. D.** 197
  "The Thompson-Yates and Johnston Laboratories Report."—**Prof. R. T. Hewlett** 197
  Guillet: "L'Industrie de la Soude" 197
  Deller: "Telephoto-Work" 197
  Dowsett: "Buy English Acres" 197
Letters to the Editor :—
  Variation of Atmospheric Absorption.—**Prof. S. P. Langley, For. M.R.S.** 198
  Use of Radium in Section Cutting.—**Prof. Henry H. Dixon** 198
  The Blondlot n-Rays.—**John Butler Burke** 198
Aboriginal American Basketry. (*Illustrated.*) **By A. C. H.** 199
The Mining Statistics of the World. By B. H. B. . . 199
Notes 200
Our Astronomical Column :—
  Astronomical Occurrences in July 205
  Smithsonian Institution 1900 Eclipse Results 205
  The Orbit of the Companion to Sirius 205
  Observations of Jupiter during 1903 205
  Observations of the Satellites of Saturn 205
  The German Royal Naval Observatory 205
  An Interesting Meteor Trail 205
The Royal Society Conversazione 205
Some Ancient Mammal Portraits. (*Illustrated.*) **By R. Lydekker, F.R.S.** 207
The Action of Radium Emanations on Diamond. By Sir William Crookes, F.R.S. 209
The Markings and Rotation Period of Mercury . . 210
On the Dimensions of Deep-Sea Waves, and their Relation to Meteorological and Geographical Conditions. By Dr. Vaughan Cornish 210
Geology in Norway 211
University and Educational Intelligence 212
Societies and Academies 213